



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/559,403	04/26/2000	Yong Beom Kim	0214-0166P-SP	1204

7590 09/06/2002
Birch Stewart Kolasch & Birch LLP
PO Box 747
Falls Church, VA 22040-0747

EXAMINER

NGUYEN, HOAN C

ART UNIT	PAPER NUMBER
----------	--------------

2871

DATE MAILED: 09/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

09/559,403

Applicant(s)

KIM, YONG BEOM

Examiner

HOAN C. NGUYEN

Art Unit

2871

-- The MAILING DATE of this communicati n appears on the c ver sheet with the corresp nd nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features:

- “a first conducting line 31 proximal to the reflecting layer, the first conducting line at least partially defining the light-transmitting region” in claim 21;
- “a second conducting line proximal to the reflecting layer, the second conducting line at least partially defining the light-transmitting region” in claim 22,

must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application

being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

1. Claims 1-3 and 5-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Kubo et al. (US6295109B1).

In regard to claims 1, 2, 3 and 5-6, Kubo et al. teach (Figs. 2-3) a transmission-reflection type liquid crystal display device comprising:

- a first transparent substrate 1;
- a second transparent substrate-2,
- a liquid crystal layer 5 between the first transparent substrate and the second transparent substrate;
- a linear polarizer 9 on the second transparent substrate;
- a circular polarizer ($\lambda/4$ wave plate 7) on an outer side of the first transparent substrate 1;
- a reflecting film (reflective electrode region 3R) on an inner side of the first transparent substrate adjacent to the liquid crystal layer, the reflecting film defining a light-transmitting region (transmissive electrode region 8T).
- a $\lambda/4$ phase shift plate($\lambda/4$ wave plate 10) between the linear polarizer 9 and the liquid crystal layer according to claim 2.
- a transparent common electrode (transsssiive electrode 4) between.the linear polarizer 6 and the liquid crystal layer according to claim 6.

Art Unit: 2871

In regard to claim 3, Kubo et al. teach (Fig. 2) a transmission-reflection type liquid crystal display device, wherein when a voltage is not impressed on the liquid crystal layer, the liquid crystal layer imparts or grants a phase shift of $\lambda/4$ to light transmitted through the liquid crystal layer since the retardation of liquid crystal 5 is zero when no voltage is applied (col. 10, lines 11-13).

In regard to claim 5, Kubo et al. teach (Figs. 2-3) a transmission-reflection type liquid crystal display device further comprising a color filter on the reflective and transmissive electrode regions (col. 25 lines 55-58), thereby between the linear polarizer and the liquid crystal layer.

Regard to claims 7-10, Kubo et al. teach (Fig. 8A) a transmission-reflection type liquid crystal display device comprising

- a plurality of gate lines 21 and data lines 22 defining a plurality of pixels;
- a transistor 23 in each pixel,
- a gate of which is connected to a gate line and a second terminal of which is connected to a data line; a reflecting film 30 formed in each pixel and connected to a third terminal of the transistor in each pixel,

wherein

- a light-transmitting region 31 through which light may pass exists between the gate line and the reflecting film in each pixel.

Art Unit: 2871

- light-transmitting region 21 exists between a data line adjacent to the data line connected to the second terminal of the transistor and the reflecting film in each pixel according to claim 8.
- the reflecting film overlaps (not entirely) the data line connected to the second terminal of the transistor in each pixel according to claim 9.
- the reflecting film overlaps (not entirely) a gate line adjacent to the gate line connected to the gate of the transistor in each pixel according to claim 10.

Regard to claims 11-16, Kubo et al. teach (Fig. 2) a transmission-reflection type liquid crystal display device comprising

- a lower transparent substrate 2;
- an upper transparent substrate 1;
- a liquid crystal layer 5 between the lower transparent substrate and the upper transparent substrate;
- a linear polarizer 6 on the upper transparent substrate;
- a $\lambda/4$ phase shift plate ($\lambda/4$ wave plate 7) between the linear polarizer and the liquid crystal layer;
- a reflecting film for reflecting ambient light on the lower transparent substrate adjacent to the liquid crystal layer, the reflecting film defining a light-transmitting region for transmitting light from the backlight (col. 1 lines 30-35).
- a transparent common electrode (transmissive electrode 4) between the linear polarizer and the liquid crystal layer for, in conjunction with the reflecting film,

Art Unit: 2871

applying a voltage across the liquid crystal layer (col. 16 lines 35-39) according to claim 16;

wherein

- ambient light reflected from the reflecting film is selectively passed by the linear polarizer, depending on whether a voltage is applied across the liquid crystal layer (col. 13, lines 24-40, col. 24 lines 34-49) according to claim 12.
- a $\lambda/4$ phase shift plate induces a $\lambda/4$ phase shift (or circular polarization) in the reflected ambient light according to claim 13. This is nature of a $\lambda/4$ phase shift plate.
- light from the backlight transmitted by the light transmitting region is selectively passed by the linear polarizer, depending on whether a voltage is applied across the liquid crystal layer (col. 13, lines 24-40, col. 24 lines 34-49) according to claim 14.
- a $\lambda/4$ phase shift plate induces a $\lambda/4$ phase shift (or circular polarization) in the transmitted light from the backlight according to claim 15. This is nature of a $\lambda/4$ phase shift plate.

In regard to claims 17-20, Kubo et al. teach (Fig. 2) a transmission-reflection type liquid crystal display device comprising

- a polarizing layer 6;
- a phase shifting layer ($\lambda/4$ wave plate 7) adjacent to the polarizing layer;

Art Unit: 2871

- a reflecting layer 3 to reflect light from the front of the device, the reflecting film at least partially defining a light-transmitting region 8 through which light from the backlight may pass;
- a liquid crystal layer between the phase shifting layer and the reflecting layer.
- a transparent common electrode between the polarizing layer and the liquid crystal layer for, in conjunction with the reflecting film, applying a voltage across the liquid crystal layer (col. 24 lines 34-49) according to claim 20.

wherein

- the light reflected from the reflecting layer is selectively transmitted by the polarizing layer, depending on whether a voltage is applied across the liquid crystal layer (col. 13, lines 24-40, col. 24 lines 34-49) according to claim 18;
- light from the backlight transmitted by the light transmitting region is selectively transmitted by the polarizing layer, depending on whether a voltage is applied across the liquid crystal layer (col. 13, lines 24-40, col. 24 lines 34-49) according to claim 19.

In regard to claims 21-22, Kubo et al. teach (Fig. 8B) a transmission-reflection type liquid crystal display device further comprising

- a first conducting line (gate line 21) proximal to the reflecting layer, the first conducting line at least partially defining the light-transmitting region;
- a second conducting line (data line 22) proximal to the reflecting layer, the second conducting line at least partially defining the light-transmitting region.

Art Unit: 2871

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo et al. (US6295109B1) as applied to claim 1 above in view of Moriyama et al. (US4017156).

Moriyama et al. teach (col. 3 lines 8-14) a transmission-reflection type liquid crystal display device, wherein the circular polarizer includes a right handed helical cholesteric liquid crystal having a range of pitch values p of λ/n for electro-optical display images, where n is an average index of refraction of cholesteric liquid crystal and λ is wavelength. Since the display device is conventionally worked or performed with the visible light, which has wavelength of $\lambda=380\text{nm}-800\text{nm}$.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a transmission-reflection type liquid crystal display device as Kubo et al. disclosed with the circular polarizer includes a right handed helical cholesteric liquid crystal having a range of pitch values p of λ/n for electro-optical display images, where n is an average index of refraction of cholesteric liquid crystal and $\lambda=380-800\text{nm}$.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Art Unit: 2871

Narita et al. (US5555114A) disclose a liquid crystal display with reflective color filters.

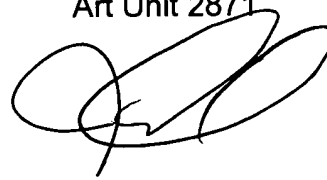
Hanelt et al. (US5827449A) disclose liquid crystal mixture with cholesteric liquid crystal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (703) 306-0472. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SIKES L WILLIAM can be reached on (703) 308-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-8178 for regular communications and (703) 308-5841 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

HOAN C. NGUYEN
Examiner
Art Unit 2871



chn
August 29, 2002